BIO-449

Understanding statistics and experimental design

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Cursus	Sem.	Type
Bioengineering	MA1, MA3	Opt.
Civil & Environmental Engineering		Obl.
Neuroscience		Opt.
Sciences du vivant	MA1, MA3	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Remark

The course is for MA students and in particular for PhD students.

Summary

This course is neither an introduction to the mathematics of statistics nor an introduction to a statistics program such as R. The aim of the course is to understand statistics from its experimental design and to avoid common pitfalls of statistical reasoning. There is space to discuss ongoing work.

Content

Sensitivity and Bias
Statistical Power
Bayes Theorem and Odds Ratio
What the t-test measures
Classical statistical tests
Experimental design
Fraud and misconduct of statistics

Learning Prerequisites

Required courses

Very Basic Mathematics